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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/081,391	02/22/2002	Kofi Dankwa Anim-Appiah	TI-33234	1578
23494	7590	04/19/2005	EXAMINER	
TEXAS INSTRUMENTS INCORPORATED			AMINZAY, SHAIMA Q	
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DALLAS, TX 75265			PAPER NUMBER	

2684

DATE MAILED: 04/19/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/081,391

Applicant(s)

ANIM-APPIAH ET AL.

Examiner

Shaima Q. Aminzay

Art Unit

2684

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 22 October 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-28 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-28 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 April 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## ***DETAILED ACTION***

### ***Response to Amendment***

The following office action is in response to Amendment, filed on October 22, 2004.

Claims 1-28 are pending.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action

(a ) Patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made

1. Claims 1-21, and 23-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Meredith (Meredith et al. U. S. Patent number 5,701,596), and in view of Dam (Dam et al. U. S. Publication number 20010,016,504 A1).

Regarding claims 1, 2, and 26 Meredith teaches a wireless communication system (see for example, column 1, lines 13-20, column 3, lines 65-67 continued to column 4, lines 1-4), comprising: a number N of wireless front end units (see for example, Figure 10, "radio channel Unit" one to N), and a number N of antennas (see for example, Figure 10, N antennas including the transmit filters, buffers and "Lossy combiner sum" units), and a switching arrangement (see for

example, Figure 10, "1-pole-N-Throw" switches) connected between the N wireless front end units and the N antennas for permitting the wireless front end units to be switched into connection with the antennas (see for example, Figure 10, the switching arrangement connects between M number of "radio channel" units, and N number of antennas for permitting the radios to be switched into connection with antennas), and sharing N antennae among N wireless front end units (see for example, column 10, lines 16-33, the N number of antennas can be equal to the number of M radios ( $M=N$ )).

However, Meredith does not teach permitting any of the wireless front end units to be switched into connection with any of the antennas while also maintaining the remaining wireless front end units connected to respective ones of the remaining antennas

Dam teaches the teach permitting any of the wireless front end units to be switched into connection with any of the antennas while also maintaining the remaining wireless front end units connected to respective ones of the remaining antennas (see for example, Figure 4, the antenna array 460 can be connected to any of the radio transmitters (410) and receivers (420) through switches 480 and 490 while maintaining the remaining radios connected to respective antennas, paragraph [0030], lines 1-9, and [0033], lines 1-13).

It would have been obvious to one of ordinary skill in the art at the time invention was made to combine Dam's antennas arrangements and diversity combination techniques (see for example, paragraph [0012], lines 4-6, and

[0013], lines 1-8) with Meredith's mobile communications interconnection of any one of a plurality of radios with any one of a plurality of antennas (see for example, column 1, lines 9-10, and lines 13-20) to provide mobile communication system with diversity combination technique for interconnection of plurality of radios with a plurality of antennas (see for example Dam, paragraph [0012], lines 4-6, and [0013], lines 1-8; Meredith column 1, lines 9-10, and lines 13-20), and to provide "the flexibility in operation of the transceiver to more efficiently perform certain transceiver functions, e.g., locating of a mobile terminal during access to the system" (Dam, paragraph [0013], lines 6-8).

Regarding claims 3, 4 and 5, Meredith and Dam teach claim 1, and further Meredith teaches a controller coupled to the N switches for synchronously controlling the N switches using a single control signal, and switching the N switches simultaneously (see for example, column 3, lines 7-31, and lines 49-64).

Regarding claims 6, 7, 8, 9, 10, 11, 12, 14, 15, 16, 17, 18, 19, 20, 21, 23, 27, and 28, Meredith and Dam teach claims 1, 2, 13, and further Meredith teaches the N switches is a single-pole switch with N contacts and N-throw respectively coupled to the N antennas and coupled to the radios (see for example, column 6, lines 35-60).

Regarding claim 13, Meredith and Dam teach claim 1, and further Meredith

teaches switching arrangement includes 2N switches (see for example, Figure 1A and 1B the controller (267) is connected to 240 and 217).

2. Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Meredith (Meredith et al. U. S. Patent number 5,701,596) in view of Dam (Dam et al. U. S. Publication number 2001,001,6504 A1), and further in view of Vaisanen (Vaisanen et al. U. S. Patent number 6,560,443).

Regarding claim 22, Meredith and Dam teach claim 21, and further Dam teaches the GSM systems (see for example, paragraph [0029], lines 10-13).

However, Meredith and Dam do not teach the front end units are Bluetooth and the standard IEEE 802.11.

Vaisanen teaches the Bluetooth units and the standard IEEE 802.11 (see for example, column 1, lines 8-14, and column 4, lines 43-50).

It would have been obvious to one of ordinary skill in the art at the time invention was made to combine Vaisanen's diversity antennas and wireless units with Dam's antennas arrangements combination techniques (see for example, paragraph [0012], lines 4-6, and [0013], lines 1-8), and with Meredith's mobile communications interconnection of any one of a plurality of radios with any one of a plurality of antennas (see for example, column 1, lines 9-10, and lines 13-20) to provide mobile communication system with diversity combination technique for interconnection of plurality of radios with a plurality of antennas (see for example

Dam, paragraph [0012], lines 4-6, and [0013], lines 1-8; Meredith column 1, lines 9-10, and lines 13-20), and to provide "the flexibility in operation of the transceiver to more efficiently perform certain transceiver functions, e.g., locating of a mobile terminal during access to the system" (Dam, paragraph [0013], lines 6-8), and to further provide "sharing diversity antennas efficiently and as economically as possible" (Vaisanen, column 3, lines 44-46).

### ***Response to Arguments***

3. Applicant's arguments filed October 22, 2004 have been fully considered but they are not persuasive.

The applicant's argued features in the claims, i.e., providing a wireless communication system, comprising: "a switching arrangement connected between the N wireless front end units and the N antennas for permitting any of the wireless front end units to be switched into connection with any of the antennas while also maintaining the remaining wireless front end units connected to respective ones of the remaining antennas in order to optimize diversity transmission or reception quality", and "switching any one of N wireless front end units into connection with any one of N antennas" and "simultaneously maintaining the remaining wireless front end units connected to respective ones of the remaining antennas" to be established read upon Meredith (Meredith et al.

U. S. Patent number 5,701,596) in view of Dam (Dam et al. U. S. Publication number 2001,001,6504 A1) as follows.

Meredith disclose a wireless communication system, comprising: a number of wireless radio channel Units and a number of antennas including the transmit filters, buffers, and a switching arrangement of "1-pole-N-Throw" switches connected between the number of wireless radio channel units and the number of antennas for permitting the wireless radio channel units to be switched into connection with the antennas, and sharing the number of antennas among the number of wireless radio units to optimize diversity transmission or reception quality (see for example, column 1, lines 13-20, column 3, lines 65-67 continued to column 4, lines 1-4, Figure 10, N number of radio channel Units, N antennas including the transmit filters, buffers and "Lossy combiner sum" units, "1-pole-N-Throw" switches, column 10, lines 16-33, column 1, lines 35-43, column 3, lines 41-48). Meredith does not specifically teach switching the wireless front end units into connection with any of the antennas while also maintaining the remaining wireless front end units connected to one of the antennas, however, Meredith discloses "switching any one of N wireless front end units into connection with any one of N antennas" (see for example, column 2, lines 55-64 number of radio channel units (N wireless front)) and corresponding wireless front end unit (radio channel unit) connected to more than one antenna (see for example, column 3, lines 41-52), and that there maybe more receiver, but only one antenna at a time can be connected to N to N (see for example, column 10,



lines 8-26). In a related art dealing with communication system and switching arrangement connected between the N wireless front end units and the N antennas (see for example, Figure 4, the antenna array 460 can be connected to any of the radio transmitters (410) and receivers (420) through switches 480 and 490 while maintaining the remaining radios connected to respective antennas), Dam teaches switching the wireless front end units into connection with any of the antennas while also maintaining the remaining wireless front end units connected to one of the antennas (see for example, Figure 4, the antenna array 460 can be connected to any of the radio transmitters (410) and receivers (420) through switches 480 and 490 while maintaining the remaining radios connected to respective antennas, paragraph [0030], lines 1-9, and [0033], lines 1-13).

Meredith and Dam are both analogous to the applicants teaching, that's why they do obviate.

Therefor, Examiner believes the claims are broad enough to include Dam's antennas arrangements and diversity combination with Meredith's mobile communications interconnection of plurality of radios and plurality of antennas. The rejection is maintained.

### ***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.


### Inquiry

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shaima Q. Aminzay whose telephone number is 703-305-8723. The examiner can normally be reached on 7:00 AM -5:00 PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nay Maung can be reached on 703-308-7745, the primary examiner, Nick Corsaro can be reached on 703-306-5616. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Shaima Q. Aminzay

(Examiner)

  
NICK CORSARO  
PRIMARY EXAMINER

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Nay Maung

(SPE)

Art Unit 2684

April 14, 2005